90-848717980 298

Thank You . . .

for your purchase of one of the finest outboards available. You have made a sound investment in boating pleasure. Your outboard has been manufactured by Mercury Marine, a world leader in marine technology and outboard manufacturing since 1939. These years of experience have been committed to the goal of producing the finest quality products. This led to Mercury Marine's reputation for strict quality control, excellence, durability, lasting performance and being the best at providing after-the-sale support.

Please read this manual carefully before operating your outboard. This manual has been prepared to assist you in the operation, safe use and care of your outboard.

All of us at Mercury Marine took pride in building your outboard and wish you many years of happy and safe boating.

Again, thank you for your confidence in Mercury Marine.

XR2 • XR2 SS

MERCURY MARINE

Mercury Hi-Performance,
N7480 County Road "UU"
Fond du Lac, WI 54935-9585

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The description and specifications contained herein were in effect at the time this manual was approved for printing. Mercury Marine, whose policy is one of continued improvement, reserves the right to discontinue models at any time, to change specifications, designs, methods, or procedures without notice or incurring obligation.

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GENERAL INFORMATION

oba1
Boater's Responsibilities

The operator (driver) is responsible for the correct and safe operation of the boat and safety of its occupants and general public. It is strongly recommended that each operator (driver) read and understand this entire manual before operating the outboard.

Be sure at least one additional person on board is instructed in the basics of starting and operating the outboard and boat handling in case the driver is unable to operate the boat.

obb1
Before Operating Your Outboard

Read this manual carefully. Learn how to operate your outboard properly. If you have any questions, contact your dealer.

Safety and operating information that is practiced along with using good common sense can help prevent personal injury and product damage.

This manual as well as safety labels posted on the outboard use the following safety alerts to draw your attention to special safety instructions that should be followed.

⚠ DANGER

DANGER – Immediate hazards which WILL result in severe personal injury or death.

⚠ WARNING

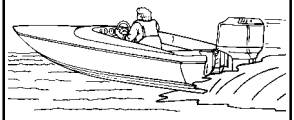
WARNING – Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ CAUTION

CAUTION – Hazards or unsafe practices which could result in minor injury or product or property damage.

U.S. COAST GUARD CAPACITY	
MAXIMUM HORSEPOWER	XXX
MAXIMUM PERSON CAPACITY (POUNDS)	XXX
MAXIMUM WEIGHT CAPACITY	XXX

1



2

obc1

Boat Horsepower Capacity

1 Do not overpower or overload your boat. Most boats will carry a required capacity plate indicating the maximum acceptable power and load as determined by the manufacturer following certain federal guidelines. If in doubt, contact your dealer or the boat manufacturer.

⚠ WARNING

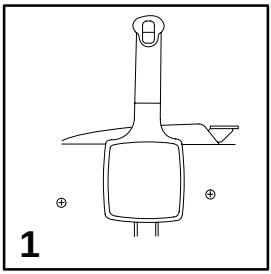
Using an outboard that exceeds the maximum horsepower limit of a boat can: 1. cause loss of boat control 2. place too much weight at the transom altering the designed flotation characteristics of the boat or 3. cause the boat to break apart particularly around the transom area. Overpowering a boat can result in serious injury, death, or boat damage.

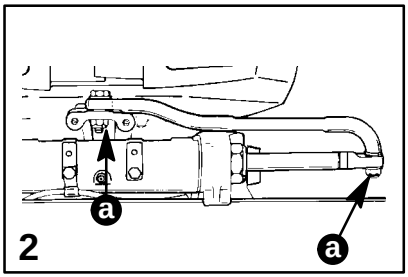
hbd1

High-Speed And High-Performance Boat Operation

2 If your outboard is to be used on a high-speed or high-performance boat with which you are unfamiliar, we recommend that you never operate it at its high speed capability without first requesting an initial orientation and familiarization demonstration ride with your dealer or an operator experienced with your boat/outboard combination. For additional information, read the “Guide to Hi-Performance Boat Operation” booklet included in your literature package.

GENERAL INFORMATION





obe1

Outboard Remote Control

1 The remote control connected to your outboard must be equipped with a start-in-gear protection device. This prevents the engine from starting when the outboard is in gear.

⚠ WARNING

Avoid serious injury or death from a sudden unexpected acceleration when starting your engine. The design of this outboard requires that the remote control used with it must have a built in start-in-gear protection device.

obf1

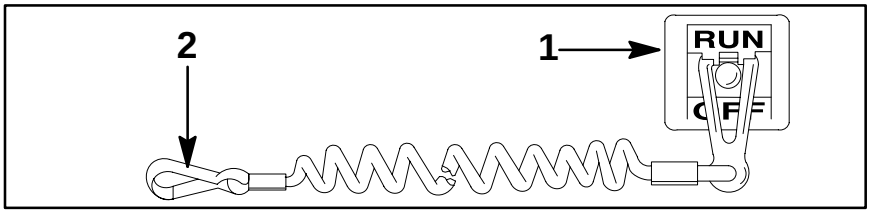
Remote Steering Notice

2 The steering link rod that connects the steering cable to the engine must be fastened utilizing self-locking nuts (a). These self-locking nuts must never be replaced with common nuts (non locking) as they will work loose and vibrate off, freeing the link rod to disengage.

⚠ WARNING

Disengagement of a steering link rod can result in the boat taking a full, sudden, sharp turn. This potentially violent action can cause occupants to be thrown overboard exposing them to serious injury or death.

GENERAL INFORMATION



hbg1

Lanyard Stop Switch

1 The purpose of a lanyard stop switch is to turn off the engine when the operator moves far enough away from the operator's position (as in accidental ejection from the operator's position) to activate the switch. Tiller handle outboards and some remote control units are equipped with a lanyard stop switch. A lanyard stop switch can be installed as an accessory – generally on the dashboard or side adjacent to the operator's position.

2 The lanyard is a cord usually between 4 and 5 feet (1220 and 1524 mm) in length when stretched out with an element on one end made to be inserted into the switch and a snap on the other end for attaching to the operator. The lanyard is coiled to make its at-rest condition as short as possible so as to minimize the likelihood of lanyard entanglement with nearby objects. It is made as long as it is in its stretched condition to minimize the likelihood of accidental activation should the operator choose to move around in an area close to the normal operator's position. If it is desired to have a shorter lanyard, wrap the lanyard around the operator's wrist or leg, or tie a knot in the lanyard.

Read the following Safety Information before proceeding.

(continued on next page)

GENERAL INFORMATION

Lanyard Stop Switch (Continued)

Read the following Safety Information before proceeding.

Important Safety Information: The purpose of a lanyard stop switch is to stop the engine when the operator moves far enough away from the operator's position to activate the switch. This would occur if the operator accidentally falls overboard or moves within the boat a sufficient distance from the operator's position. Accidental ejections and falls overboard are more likely to occur in certain types of boats such as low sided inflatables or bass boats, high-performance boats and light, sensitive-handling fishing boats operated by hand-tiller. Accidental ejections and falls overboard are also likely to occur as a result of poor operating practices such as sitting on the back of the seat or gunwale at planing speeds, standing at planing speeds, sitting on elevated fishing boat decks, operating at planing speeds in shallow or obstacle-infested waters, releasing your grip on a steering wheel or tiller handle that is pulling in one direction, drinking alcohol or consuming drugs, or daring, high-speed boat maneuvers.

While activation of the lanyard stop switch will stop the engine immediately, a boat will continue to coast for some distance depending upon the velocity and degree of any turn at shut-down. However, the boat will not complete a full circle. While the boat is coasting, it can cause injury to anyone in the boat's path as seriously as the boat would when under power.

We strongly recommend that other occupants be instructed on proper starting and operating procedures should they be required to operate the engine in an emergency (e.g. if the operator is accidentally ejected).

⚠WARNING

Should the operator fall out of the boat, the possibility of serious injury or death from being run over by the boat can be greatly reduced by stopping the engine immediately. Always properly connect both ends of the stop switch lanyard – to the stop switch and the operator.

(continued on next page)

GENERAL INFORMATION

Lanyard Stop Switch (Continued)

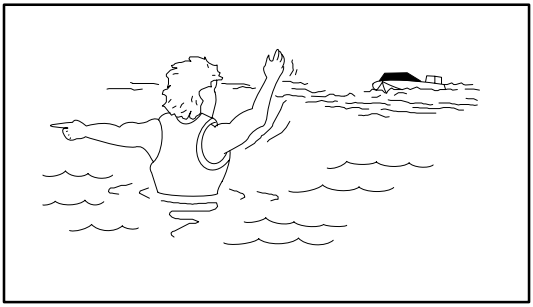
Accidental or unintended activation of the switch during normal operation is also a possibility. This could cause any, or all, of the following potentially hazardous situations:

1. Occupants could be thrown forward due to unexpected loss of forward motion – a particular concern for passengers in the front of the boat who could be ejected over the bow and possibly struck by the gear case or propeller.
2. Loss of power and directional control in heavy seas, strong current or high winds.
3. Loss of control when docking.

⚠WARNING

Avoid serious injury or death from deceleration forces resulting from in accidental or unintended stop switch activation. The boat operator should never leave the operator's station without first disconnecting the stop switch lanyard from the operator.

GENERAL INFORMATION



Protecting People In The Water

WHILE YOU ARE CRUISING

It is very difficult for a person standing or floating in the water to take quick action to avoid a boat heading in his/her direction even at slow speed.

Always slow down and exercise extreme caution any time you are boating in an area where there might be people in the water.

Whenever a boat is moving (coasting) and the outboard gear shift is in neutral position, there is sufficient force by the water on the propeller to cause the propeller to rotate. This neutral propeller rotation can cause serious injury.

WHILE BOAT IS STATIONARY

Shift outboard into neutral and shut off the engine before allowing people to swim or be in the water near your boat.

⚠ WARNING

Stop your engine immediately whenever anyone in the water is near your boat. Serious injury to the person in the water is likely if contacted by a rotating propeller, a moving boat, a moving gear case, or any solid device rigidly attached to a moving boat or gear case.

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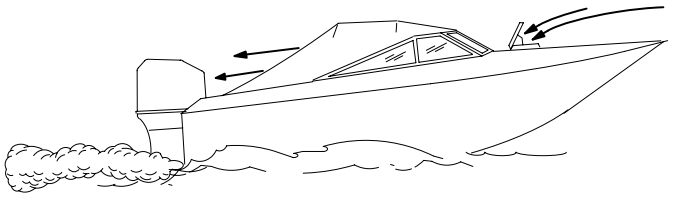
GENERAL INFORMATION



1 Courtesy of ABYC

ob

Exhaust Emissions

BE ALERT TO CARBON MONOXIDE POISONING

Carbon monoxide is present in the exhaust fumes of all internal combustion engines including the outboards, stern drives and inboard engines that propel boats, as well as the generators that power various boat accessories. Carbon monoxide is a deadly gas that is odorless, colorless and tasteless.

Early symptoms of carbon monoxide poisoning which should not be confused with seasickness or intoxication, include headache, dizziness, drowsiness, and nausea.

⚠ WARNING

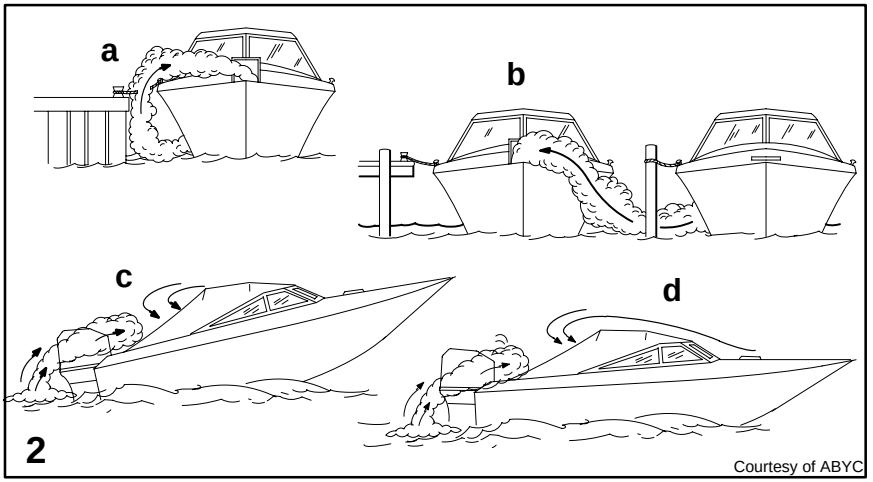
Avoid the combination of a running engine and poor ventilation. Prolonged exposure to carbon monoxide in sufficient concentration can lead to unconsciousness, brain damage, or death.

GOOD VENTILATION

Ventilate passenger area, open side curtains, or forward hatches to remove fumes.

1 Example of desired air flow through the boat.

GENERAL INFORMATION



Exhaust Emissions (Continued)

POOR VENTILATION

Under certain running and/or wind conditions, permanently enclosed or canvas enclosed cabins or cockpits with insufficient ventilation may draw in carbon monoxide. Install one or more carbon monoxide detectors in your boat.

Although the occurrence is rare, on a very calm day, swimmers and passengers in an unclosed area of a stationary boat that contains or is near a running engine may be exposed to a hazardous level of carbon monoxide.

2 Examples of Poor Ventilation:

While boat is stationary

a. Running the engine when the boat is moored in a confined space.

b. Mooring close to another boat that has its engine running.

While boat is moving

c. Running the boat with the trim angle of the bow too high.

d. Running the boat with no forward hatches open (station wagon effect).

GENERAL INFORMATION

Selecting Accessories For Your Outboard

Genuine Mercury Marine Quicksilver Accessories have been specifically designed and tested for your outboard.

Mercury Marine Quicksilver accessories are available from Mercury Marine dealers.

Some accessories not manufactured or sold by Mercury Marine are not designed to be safely used with your outboard or outboard operating system. Acquire and read the installation, operation, and maintenance manuals for all your selected accessories.

⚠ WARNING

Check with your dealer before installation of accessories. The misuse of acceptable accessories or the use of unacceptable accessories can result in serious injury, death, or product failure.

obk1

Safe Boating Suggestions

In order to safely enjoy the waterways, familiarize yourself with local and other governmental boating regulations and restrictions, and consider the following suggestions.

Use flotation devices. Have an approved personal flotation device of suitable size for each person aboard (it is the law) and have it readily accessible.

Do not overload your boat. Most boats are rated and certified for maximum load (weight) capacities (refer to your boat capacity plate). If in doubt, contact your dealer or the boats manufacturer.

Perform safety checks and required maintenance. Follow a regular schedule and ensure that all repairs are properly made.

(continued on next page)

GENERAL INFORMATION

Safe Boating Suggestions (Continued)

Know and obey all nautical rules and laws of the waterways. Boat operators should complete a boating safety course. Courses are offered in the U.S.A. by (1) The U.S. Coast Guard Auxiliary, (2) The Power Squadron, (3) The Red Cross and (4) your state boating law enforcement agency. Inquiries may be made to the Boating Hotline, 1-800-368-5647 or the Boat U.S. Foundation information number 1-800-336-BOAT.

Make sure everyone in the boat is properly seated. Don't allow anyone to sit or ride on any part of the boat that was not intended for such use. This includes backs of seats, gunwales, transom, bow, decks, raised fishing seats, any rotating fishing seat; anywhere that sudden unexpected acceleration, sudden stopping, unexpected loss of boat control or sudden boat movement could cause a person to be thrown overboard or into the boat.

Never be under the influence of alcohol or drugs while boating (it is the law). They impair your judgment and greatly reduce your ability to react quickly.

Prepare other boat operators. Instruct at least one person on board in the basics of starting and operating the outboard and boat handling in case the driver becomes disabled or falls overboard.

Passenger boarding. Stop the engine whenever passengers are boarding, unloading or are near the back (stern) of the boat. Just shifting the outboard into neutral is not sufficient.

Be alert. The operator of the boat is responsible by law to "maintain a proper lookout by sight (and hearing)." The operator must have an unobstructed view particularly to the front. No passengers, load, or fishing seats should block the operators view when operating the boat above idle speed.

Never drive your boat directly behind a water skier in case the skier falls. As an example, your boat traveling at 25 miles per hour (40 km/hr) in 5 seconds will overtake a fallen skier who was 200 feet (61m) in front of you.

(continued on next page)

ob

GENERAL INFORMATION

Safe Boating Suggestions (Continued)

Watch fallen skiers. When using your boat for water skiing or similar activities, always keep a fallen or down skier on the operator's side of the boat while returning to attend the skier. The operator should always have the down skier in sight and never back up to the skier or anyone in the water.

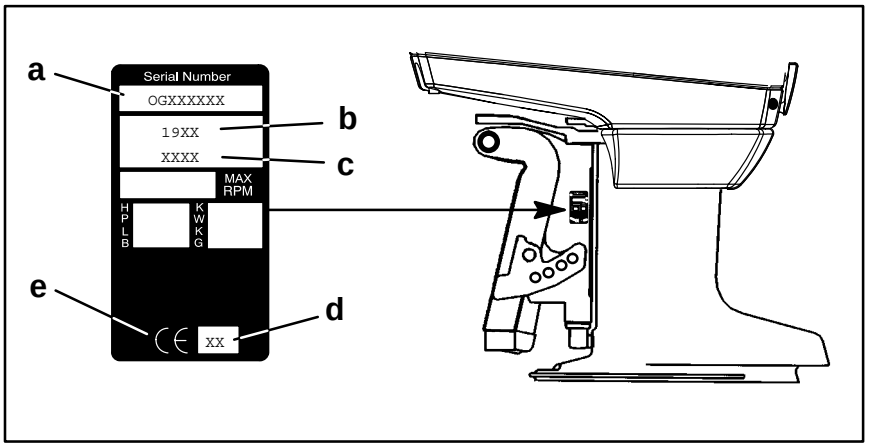
Report accidents. Boat operators are required by law to file a Boating Accident Report with their state boating law enforcement agency when their boat is involved in certain boating accidents. A boating accident must be reported if (1) there is loss of life or probable loss of life, (2) there is personal injury requiring medical treatment beyond first aid, (3) there is damage to boats or other property where the damage value exceeds $500.00 or (4) there is complete loss of the boat. Seek further assistance from local law enforcement.

obl2

Recording Serial Number

It is important to record this number for future reference. The serial number is located on the outboard as shown.

a - Serial Number
b - Model Year
c - Model Designation
d - Year Manufactured
e - Certified Europe Insignia



GENERAL INFORMATION

Torque Requirements

ITEM	TORQUE
Connecting Rods	30 lb. ft. (41 N·m) 271 Loctite
Crankcase Cover to Block	3/8 in. -- 40 lb. ft. (54 N·m) Light Oil 5/16 in. -- 200 lb. in. (23 N·m) Light Oil
Exhaust Divider Plate Cover	200 lb. in. (23 N·m)
Lower End Cap	100 lb. in. (11 N·m) 271 Loctite
Upper End Cap	200 lb. in. (23 N·m) 271 Loctite
Reed Block to Adaptor	100 lb. in. (11 N·m) 271 Loctite
Carburetor Adaptor to Reed Housing	100 lb. in. (11 N·m) 271 Loctite
Stator Screws	40 lb. in. (5 N·m) 271 Loctite
Ignition Coil Screws	Tighten Securely
Cylinder Head Bolts	30 lb. ft. (41 N·m) + 90° or 1/4 Turn, Light Oil
Flywheel Nut	150 lb. ft. (203 N·m)
Spark Plugs	20 lb. ft. (27 N·m)
Exhaust Megaphone	25 lb. ft. (34 N·m) 271 Loctite
Powerhead to Driveshaft Housing	35 lb. ft. (47 N·m) 271 Loctite
Gearcase to Driveshaft Housing	Tighten Securely

GENERAL INFORMATION

Specifications

MODEL	XR2
Horsepower	180 (134kw)
Propshaft Kilowatts[1]	194
Full Throttle RPM Range	6000-7000
Idle RPM in Forward Gear	650-750
Weight	350 lbs. (159 kg)
Piston Displacement	122 cu. in. (2.0L/1998cc)
Bore	3.125 in. (79.5 mm)
Stroke	2.65 in. (67 mm)
Recommended Spark Plug	NGK-BUHW (P/N 33-97180)
Firing Order	1-2-3-4-5-6
Maximum Timing	25° BTDC
Idle Speed Pickup Timing	2° ATDC
Fuel Pressure	5 - 6 psi
Gear Ratio	1.87:1
Recommended Gasoline	Refer to Fuel Section
Recommended Oil	Refer to Fuel Section
Recommended Gear Case Oil	Quicksilver Hi-Performance Gear Lube (92-816026A4)
Gear Case Lubricant Capacity	22.5 fl. oz. (666 ml)
Battery Rating	Minimum reserve capacity rating of 100 minutes and CCA of 350
Charging System Output	16 amps @ 7000 RPM
Transom Height	Short Shaft = 15” (381mm) Long Shaft = 20” (508mm)
Water Pres. @ WOT	15 PSI (103.4 kPa)

[1]Measured at the propshaft in accordance with ICOMIA28

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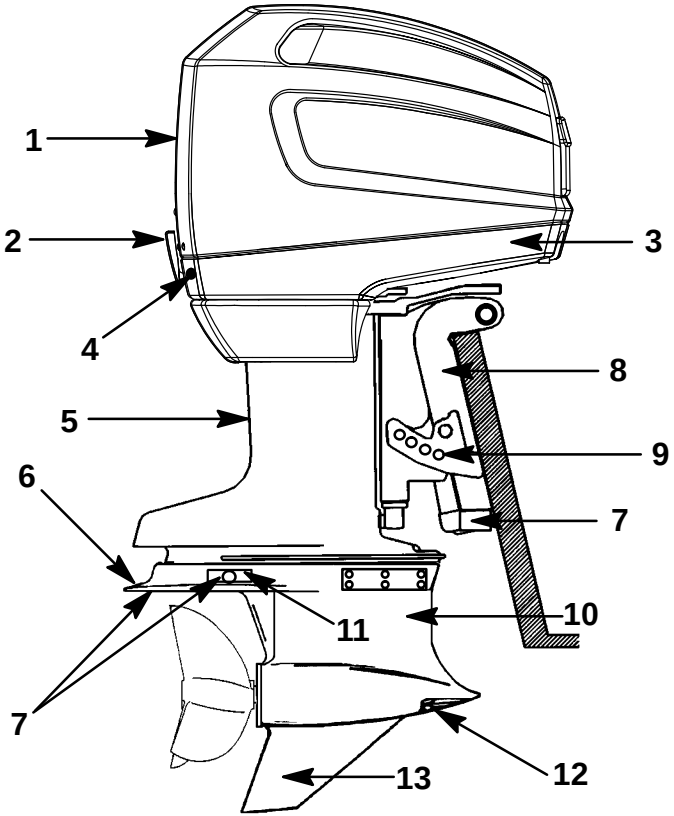
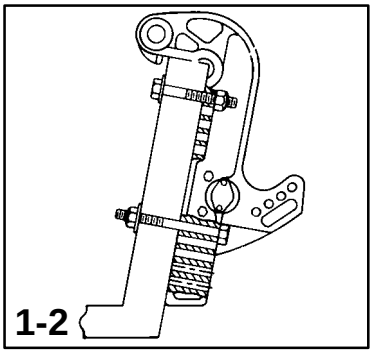
GENERAL INFORMATION



Component Identification

1. Top Cowl
2. Cowl Latch
3. Bottom Cowl
4. Water Pump Indicator Hose (Tell-Tale)
5. Drive Shaft Housing
6. Anti-Ventilation Plate
7. Corrosion Anode
8. Transom Brackets
9. Trim Adjustment Bolt
10. Gear Case
11. Water Discharge
12. Cooling Water Intake Holes
13. Skeg

INSTALLATION



Installing Outboard

⚠ WARNING

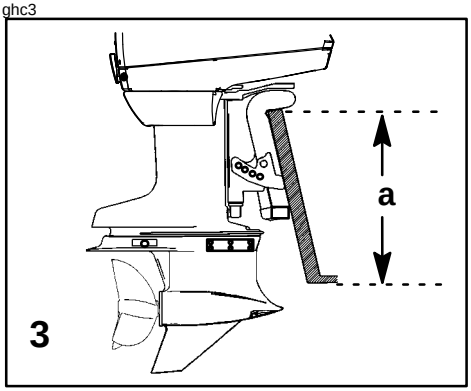
Before operation, the outboard must be correctly installed with four mounting bolts shown. Failure to correctly fasten outboard could result in outboard ejecting off boat transom causing serious injury, death, or property damage.

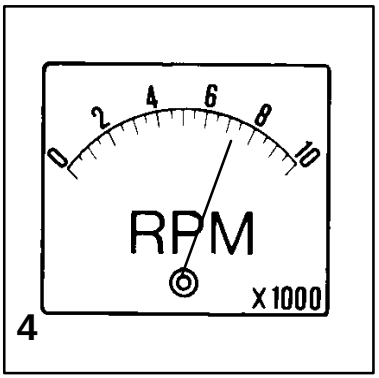
1 We strongly recommend that your dealer install your outboard and related accessories to ensure proper installation and good performance. If you install the outboard yourself, follow instructions in the Outboard Installation Manual which is provided with the outboard.

2 The outboard must be secured to the transom with the four 1/2 inch diameter mounting bolts and locknuts provided with the outboard. Install two bolts thru the upper set of holes and two bolts thru the lower set of holes.

INSTALLATION

ghc3





OUTBOARD MOUNTING HEIGHT

3 Use the following chart to determine the proper mounting height (a) for your outboard.

Gear Case Application	Minimum Height (a)	Maximum Height (a)
Sport Master	27” (68cm)	30” (76cm)

ocb1

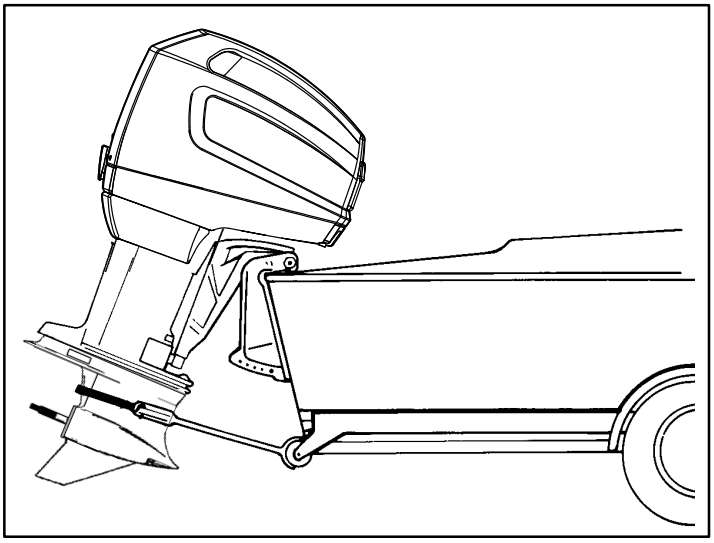
Propeller Selection

4 For best all around performance from your outboard/boat combination, select a propeller that allows the engine to operate in the upper half of the recommended full throttle RPM range with the boat normally loaded (refer to Specifications). This RPM range allows for better acceleration while maintaining maximum boat speed.

If changing conditions cause the RPM to drop below the recommended range (such as warmer, more humid weather, operation at higher elevations, increased boat load, or a dirty boat bottom/gear case) a propeller change or cleaning may be required to maintain performance and ensure the outboards durability.

Check full-throttle RPM using an accurate tachometer with the engine trimmed out to a balanced-steering condition (steering effort equal in both directions) without causing the propeller to “break loose.”

TRANSPORTING



odc1

Trailering Boat/Outboard

Trailer your boat with the outboard tilted down (vertical operating position).

If additional ground clearance is required, the outboard should be tilted up using an outboard support bar. Additional clearance may be required for railroad crossings, driveways and trailer bouncing.

IMPORTANT: Do not rely on the power trim/tilt system or tilt support lever to maintain proper ground clearance for trailering. The outboard tilt support lever is not intended to support the outboard for trailering.

Shift the outboard to forward gear. This prevents the propeller from spinning freely.

FUEL & OIL

Gasoline Recommendations

UNITED STATES AND CANADA

Use a major brand of automotive unleaded gasoline with a minimum posted octane rating of 87. Mid-grade automotive gasolines that contain fuel injector cleaner are preferred for added internal engine cleanliness. Leaded gasoline is not recommended.

INTERNATIONAL

Use a major brand of automotive unleaded gasoline with a minimum posted octane rating of 90RON. Automotive gasolines that contain fuel injector cleaner are preferred for added internal engine cleanliness. Leaded gasoline is acceptable in areas where unleaded gasoline is not available.

ALCOHOL IN GASOLINE

We do not recommend the use of gasoline which contains alcohol because of the possible adverse effect the alcohol may have on the fuel system. In general, if only gasoline containing alcohol is available, it must not contain more than 10% ethanol or 5% methanol, and the addition of a Quicksilver Water Separating Fuel Filter is recommended.

If gasoline containing alcohol is used or if you suspect the presence of alcohol in your gasoline, increase your inspection of the fuel system, visually checking for fuel leaks or abnormalities.

Gasoline containing alcohol may cause the following problems to your outboard and fuel system:

- Corrosion of metal parts.
- Deterioration of elastomers and plastic parts.
- Wear and damage of internal engine parts.
- Starting and operating difficulties.
- Vapor lock or fuel starvation.

Some of these adverse effects are due to the tendency of gasoline containing alcohol to absorb moisture from the air, resulting in a phase of water and alcohol which separates from the gasoline in the fuel tank.

The adverse effects of alcohol are more severe with methanol and are worse with increasing content of alcohol.

FUEL & OIL

Oil Recommendation

Use Mercury Hi-Performance Synthetic Blend 2-Cycle Oil.

Emergency Use Only: If the Hi-Performance 2-Cycle Oil is not available, Quicksilver NMMA Certified Premium TC-W3 or Premium Plus TC-W3 2-Cycle Oil may be substituted. These oils should not be used on a regular basis.

Periodically consult with your dealer to get the latest gasoline and oil recommendations. If Quicksilver 2-Cycle Outboard Oil is not available, substitute a 2-Cycle outboard manufacturers oil that is NMMA Certified TC-W3, or another brand of 2-Cycle outboard oil that is NMMA Certified TC-W3. The use of an inferior 2-Cycle outboard oil can reduce engine durability. **Damage from use of inferior oil may not be covered under the limited warranty**.

Gasoline/Oil Mixture

During and after break-in, use a 32:1 (3.1%) gasoline/oil mixture in your fuel tank.

GASOLINE/OIL MIXING RATIO CHART

Gas/Oil Ratio	1 Gallon Gas (3.8 Liters)	3 Gallons Gas (11.5 Liters)	6 Gallons Gas (23 Liters)
32:1 (3.1%)	4 fl. oz. (118 ml) Oil	12 fl. oz. (355 ml) Oil	24 fl. oz. (710 ml) Oil

oee5

Filling Fuel Tank

⚠ WARNING

Avoid serious injury or death from a gasoline fire or explosion. Always stop the engine and DO NOT smoke or allow open flames or sparks in the area while filling fuel tanks.

Fill fuel tanks outdoors away from heat, sparks, and open flames.

Remove portable fuel tanks from boat to refill them.

Always stop engine before refilling tanks.

Do not overfill the fuel tanks. Fuel will expand in volume as its temperature rises and can leak under pressure.

FEATURES & CONTROLS

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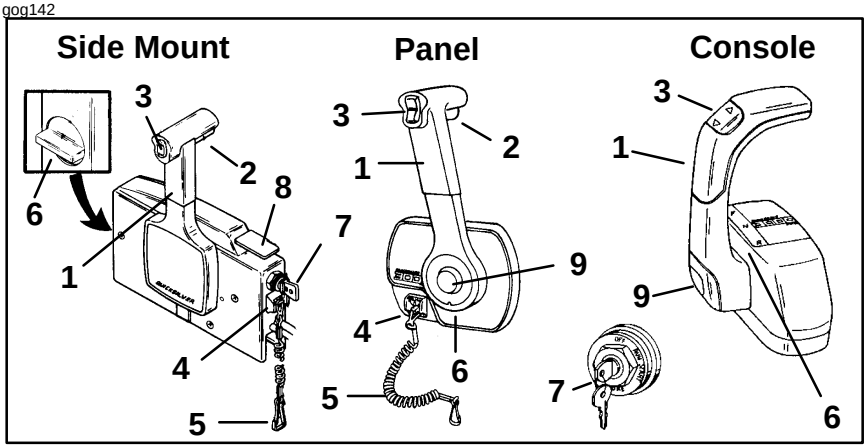

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Remote Control Features

Your boat may be equipped with one of the Quicksilver remote controls shown. If not, consult your dealer for a description of the functions and operations of the remote control.

1 Control Handle – Forward, Neutral, Reverse

2 Neutral Release Lever

3 Trim/Tilt Switch (if Equipped) – Refer to Power Trim Operation.

4 Lanyard Stop Switch – Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.

5 Lanyard – Read the lanyard stop switch safety explanation and warning in the General Information Section.

6 Throttle Friction Adjustment – Console Controls require cover removal for adjustment.

7 Ignition Key Switch – Off, On, Start, Choke

8 Fast Idle Lever – Raising lever will increase engine idle speed in neutral. Refer to Starting the Engine in the Operation Section.

9 Throttle Only Button – Pushing in the button will enable you to advance the control handle for increasing engine idle speed without shifting outboard into gear. Refer to Starting the Engine in the Operation Section.

FEATURES & CONTROLS

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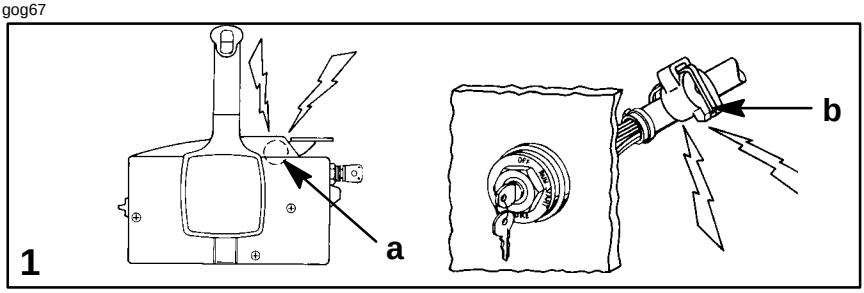

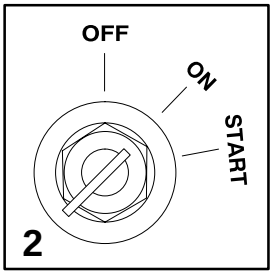

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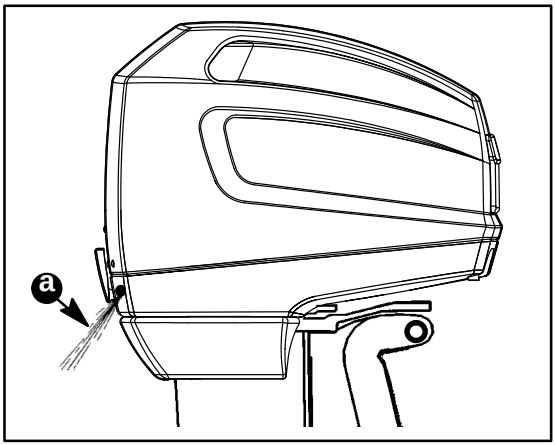
Warning System

1 The outboard warning system incorporates a warning horn inside the boat. The warning horn may be located inside the remote control (a) or under the dash (b) connected to the ignition key switch.

The system is designed for the warning horn to emit either a continuous beep or intermittent short beeps. This will alert the operator and help identify the following listed problems.

- **The warning horn sounds continuously**
  The problem is engine overheat. See explanation following.
- **The warning horn sounds intermittent short beeps.**
  The problem is low oil level in the oil injection system. See explanation following.

2 When the ignition key is initially turned on, the warning horn will sound for a moment as a test to tell you the system is working. Failure of this test indicates a problem. Have the outboard checked by your dealer.



Warning System (Continued)

THE WARNING HORN SOUNDS CONTINUOUSLY

Problem – Engine overheat. The warning system is activated when the engine temperature is too hot.

3 If the engine overheats, immediately reduce throttle speed to idle. Shift outboard into neutral and check for a steady stream of water coming out of the water pump indicator hole (a).

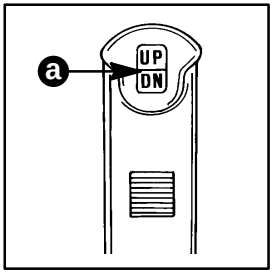
If no water is coming out of the water pump indicator hole (a) or flow is intermittent, stop engine and check cooling water intake holes for obstruction. If no obstruction is found, this may indicate a blockage in the cooling system or a water pump problem. Have the outboard checked by your dealer. Operating the engine while overheated will cause engine damage. See the following note.

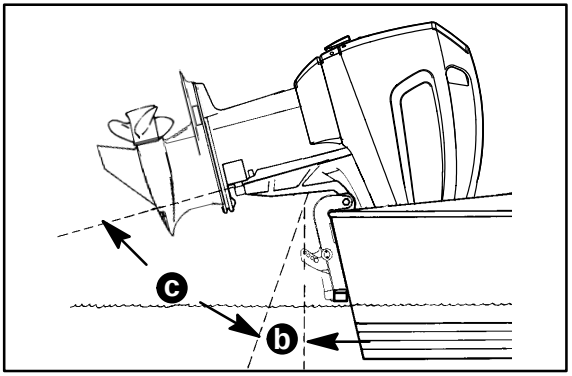
If a steady stream of water is coming out of the water pump indicator hole (a) and the warning horn continues to sound, there still may be insufficient cooling water or an engine problem. Stop engine and have it checked by your dealer. Operating the engine while overheated will cause engine damage. See the following note.

NOTE: *If you are in a stranded situation, stopping the engine and allowing it to cool back down will usually allow some additional low speed (idle) running time before the engine starts to overheat again.*

The overheat problem must be corrected before you can resume normal operation.

FEATURES & CONTROLS





Power Trim And Tilt

⚠ WARNING

Avoid possible serious injury or death. Do not trim outboard beyond its normal trim range above 2000 RPM. In order to significantly raise the strength of the Hi-Performance transom assembly, the electric trim limit and trim indicator sending unit mounting positions have been eliminated. Having no trim limit switch permits the operator to trim the outboard to any position at any throttle setting.

NOTE: *There is no tilt feature on engines with a 15 in. (38.1cm) center section. These outboards can only be trimmed.*

Your outboard has a trim/tilt control called “Power Trim.” This enables the operator to easily adjust the position of the outboard by pressing the trim switch (a). Moving the outboard in closer to the boat transom is called trimming “in” or “down.” Moving the outboard further away from the boat transom is called trimming “out” or “up.” The term “trim” generally refers to the adjustment of the outboard within the first 20° range of travel (b). This is the range used while operating your boat on plane. The term “tilt” is generally used when referring to adjusting the outboard further up out of the water (c). With the engine turned off the outboard can be tilted out of the water. At low idle speed, the outboard can also be tilted up past the trim range to permit, for example, shallow water operation.

(continued on next page)

FEATURES & CONTROLS

Power Trim And Tilt (Cont.)

POWER TRIM OPERATION

With most boats, operating around the middle of the “trim” range will give satisfactory results. However, to take full advantage of the trimming capability there may be times when you choose to trim your outboard all the way in or out. Along with an improvement in some performance aspects comes a greater responsibility for the operator, and this is being aware of some potential control hazards.

The most significant control hazard is a pull or “torque” that can be felt on the steering wheel. This steering torque results from the outboard being trimmed so that the propeller shaft is not parallel to the water surface.

⚠ WARNING

Avoid possible serious injury or death. When the outboard is trimmed in or out beyond a neutral steering condition, a pull on the steering wheel or tiller handle in either direction may result. Failure to keep a continuous firm grip on the steering wheel or tiller handle when this condition exists can result in loss of boat control as the outboard can turn freely. The boat can now “spin out” or go into a very tight maximum turn which, if unexpected, can result in occupants being thrown within the boat or out of the boat.

Consider the following lists carefully.

Trimming In or Down Can:

1. Lower the bow.
2. Result in quicker planing off, especially with a heavy load or a stern heavy boat.
3. Generally improve the ride in choppy water.
4. Increase steering torque or pull to the right (with the normal right hand rotation propeller).

(continued on next page)

FEATURES & CONTROLS

Power Trim And Tilt (Cont.)

POWER TRIM OPERATION (CONT.)

5. In excess, lower the bow of some boats to a point at which they begin to plow with their bow in the water while on plane. This can result in an unexpected turn in either direction called “bow-steering” or “over-steering” if any turn is attempted, or if a significant wave is encountered.

⚠ WARNING

Avoid possible serious injury or death. Adjust outboard to an intermediate trim position as soon as boat is on plane to avoid possible ejection due to boat spin-out. Do not attempt to turn boat when on plane if outboard is trimmed extremely in or down and there is a pull on the steering wheel.

6. In rare circumstances, the owner may decide to limit the trim in. This can be accomplished by inserting the tilt pin in whatever adjustment hole in the transom brackets is desired.

Trimming Out or Up can:

1. Lift the bow higher out of the water.
2. Generally increase top speed.
3. Increase clearance over submerged objects or a shallow bottom.
4. Increase steering torque or pull to the left at a normal installation height (with the normal right hand rotation propeller).
5. In excess, cause boat “porpoising” (bouncing) or propeller ventilation.
6. Cause engine overheating if any cooling water intake holes are above the water line.

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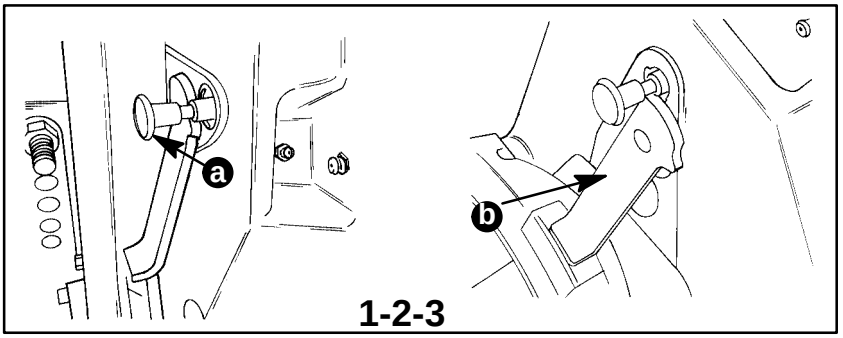

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Power Trim And Tilt (Cont.)

TILTING OPERATION (IF EQUIPPED)

To tilt outboard, shut off the engine and press the trim/tilt switch to the up position. The outboard will tilt up until the switch is released or it reaches its maximum tilt position.

1 Push in on the tilt support release knob (a) and move tilt support lever into locking position (b).

2 Lower outboard to rest on the tilt support lever.

3 Disengage the tilt support lever by raising the outboard off the support lever and rotating the lever up until it locks. Lower the outboard.

OPERATION

Pre-Starting Check List

- ☐ Operator knows safe navigation, boating, and operating procedures.
- ☐ An approved personal flotation device of suitable size for each person aboard and readily accessible (it is the law).
- ☐ A ring type life buoy or buoyant cushion designed to be thrown to a person in the water.
- ☐ Know your boats maximum load capacity. Look at the boat capacity plate.
- ☐ Fuel supply OK.
- ☐ Fuel mixture OK.
- ☐ Arrange passengers and load in the boat so the weight is distributed evenly and everyone is seated in a proper seat.
- ☐ Tell someone where you are going and when you expect to return.
- ☐ It is illegal to operate a boat while under the influence of alcohol or drugs.
- ☐ Know the waters and area you will be boating; tides, currents, sand bars, rocks, and other hazards.
- ☐ Make inspection checks listed in the Inspection and Maintenance Schedule. Refer to Maintenance Section.

Special Operating Instructions

OPERATING IN FREEZING TEMPERATURES

When using your outboard or having your outboard moored in freezing or near freezing temperature, keep the outboard tilted down at all times so the gear case is submerged. This prevents trapped water in gear case from freezing and causing possible damage to the water pump and other components.

If there is a chance of ice forming on the water, the outboard should be removed and drained completely of water. If ice should form at the water level inside the outboard drive shaft housing, it will block water flow to the engine causing possible damage.

(continued on next page)

OPERATION

Special Operating Instructions (Cont.)

OPERATING IN SALT WATER OR POLLUTED WATER

We recommend that you flush the internal water passages of your outboard with fresh water after each use in salt or polluted water. This will prevent a buildup of deposits from clogging the water passages. Refer to “Flushing The Cooling System” procedure in the Maintenance Section.

If you keep your boat moored in the water, always tilt the outboard so the gear case is completely out of water (except in freezing temperature) when not in use.

Wash down the outboard exterior and flush out the exhaust outlet of the propeller and gear case with fresh water after each use. Each month spray Quicksilver Corrosion Guard on the engine exterior, electrical components and other metal surfaces (do not spray on corrosion control anodes as this will reduce the effectiveness of the anodes).

OPERATING AT HIGH ELEVATIONS

Operating your outboard at an elevation higher than 2500 ft. (750 m) above sea level may require a carburetor jet change and/or different pitch propeller. Consult your dealer. This will reduce the normal performance loss experienced as a result of reduced oxygen in the air causing an overly rich fuel mixture.

IMPORTANT: To prevent serious damage to the engine caused by a lean fuel mixture, DO NOT operate your outboard (if the jets were changed for high elevation) at a lower elevation unless the jets are changed again to correspond to the new elevation.

OPERATION

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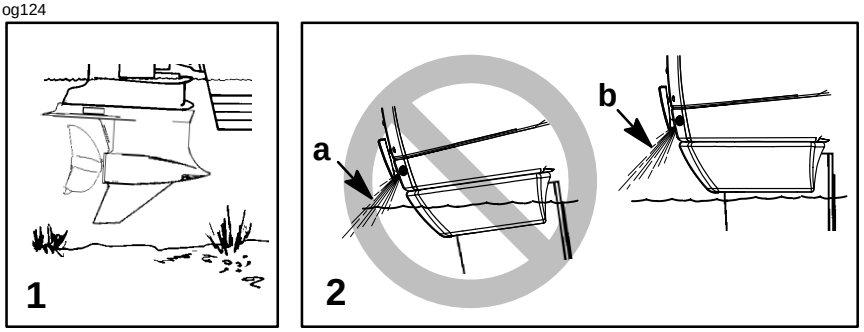

Special Operating Instructions (Cont.)

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OPERATING IN SHALLOW WATER

1 When operating your boat in shallow water, you can tilt the outboard beyond the maximum trim range to prevent hitting bottom.

a. Reduce engine speed below 2000 RPM.

b. Tilt outboard up. Make sure all the cooling water intake holes stay submerged at all times.

c. Operate the engine at slow speed only. **Never exceed 2000 RPM.**

onn1

SETTING TRIM ANGLE WHILE RUNNING ENGINE AT IDLE SPEED

2 Submerging the exhaust relief hole (a) on the outboard can happen on some boats if you trim the outboard “full-in” while running the engine at idle speed. This will cause an exhaust restriction, resulting in rough idle, excessive smoke, and fouled spark plugs. If this condition exists, trim outboard up until exhaust relief hole is out of the water (b).

OPERATION

Engine Break-in Procedure

⚠ CAUTION

Severe damage to the engine can result by not complying with the Engine Break-in Procedure.

Operate your outboard at varied throttle settings – not to exceed 1/2 throttle (3000-3500 RPM) during the first hour or ten gallons of Engine Gasoline/Oil Mixture. Refer to Fuel Section.

During the second hour of operation, or the second 10 gallons of Engine Gasoline/Oil Mixture, operate the outboard at varied throttle settings not to exceed 4500 RPM.

IMPORTANT: DO NOT operate the engine at full throttle until the second hour of break-in is completed. This includes full throttle acceleration, pulling water-skiers or wide open throttle running.

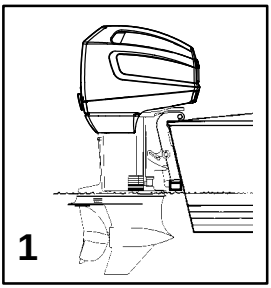
After the first two hours of running, approximately 20 gallons of fuel, full throttle operation may be obtained, but not sustained, for the remaining break-in period (approximately 10 gallons of gasoline/oil mixture or 1 hour of operation).

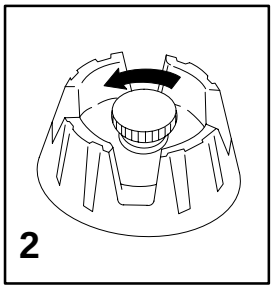
For the next seven hours of operation, full throttle operation may, again, be attained, but strongly not recommended for sustained use. (More than 5 minutes of continuous full throttle operation).

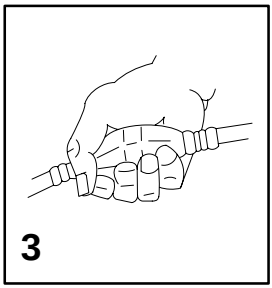
BREAK-IN AND RUNNING JETS

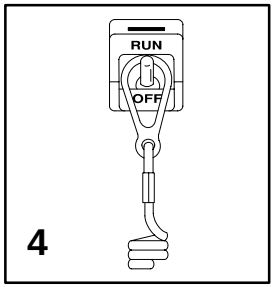
The engine has been shipped with (.094 in.) Break-In jets installed. After the proper break-in period has been completed these jets must be removed and (.090 in.) Running Jets installed. Consult the Dealer for this procedure or refer to the appropriate engine service manual for your model engine.

OPERATION









Starting The Engine

Before starting, read the Pre-Starting Check List, Special Operating Instructions, and Engine Break-in Procedure on the first three pages in the Operation Section.

⚠ CAUTION

Prevent damage to the water pump (running dry) or overheating of the engine. Never start or run your outboard (even momentarily) without water circulating through all the cooling water intake holes in the gear case.

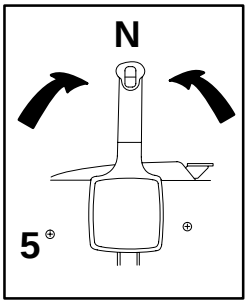
1 Lower the outboard to the run position. Make sure all the cooling water intake holes are submerged.

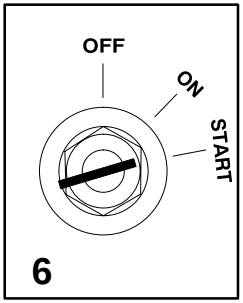
2 Open fuel tank vent screw (in filler cap) on manual venting type fuel tanks.

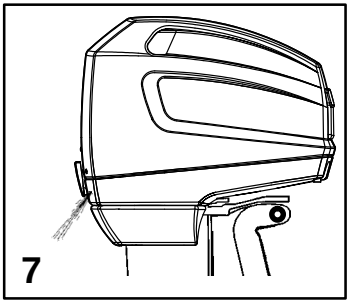
3 Squeeze the fuel line primer bulb several times until it feels firm.

4 Set the lanyard stop switch to RUN position. Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.

OPERATION







Starting The Engine (Continued)

5 Shift outboard to neutral (N) position.

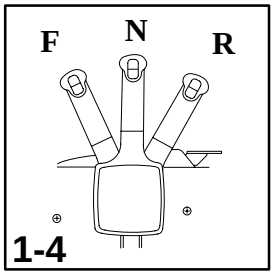
6 The engine can be manually primed by pushing in on the key choke switch (if so equipped) or a remote choke switch can be connected to the yel/blk wire at the engine harness connector. (Refer to wiring diagram).

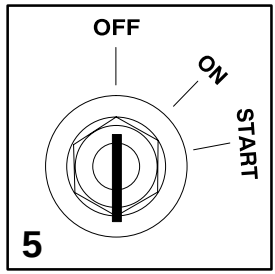
Note: Starting Flooded Engine – Advance throttle to at least 1/2 open (gear case in neutral), and crank engine for 10 seconds. Wait 30 seconds and repeat until engine starts.

7 Check for a steady stream of water flowing out of the water pump indicator (tell-tale) hose.

IMPORTANT: If no water is coming out of the water pump indicator hole, stop engine and check cooling water intake holes for obstruction. If no intake obstruction is found this may indicate a water pump failure or internal blockage in the cooling system. These conditions will cause the engine to overheat. Have the outboard checked by your dealer. Operating the engine while overheated will cause engine damage.

OPERATION





Gear Shifting

IMPORTANT: Observe the following:

- **Never shift outboard into gear unless engine speed is at idle.**
- **Do not shift outboard into Reverse when the engine is not running.**

1 Your outboard has three gear shift positions to provide operation. Forward (F), Neutral (out of gear) and Reverse (R).

2 When shifting, always stop at neutral position and allow the engine speed to return to idle.

3 Always shift outboard into gear with a quick motion.

4 After shifting outboard into gear, advance the lever further to increase speed.

Stopping The Engine

5 Reduce engine speed and shift outboard to neutral position. Turn ignition key to OFF position.

MAINTENANCE

Outboard Care

To keep your outboard in the best operating condition, it is important that your outboard receive the periodic inspections and maintenance listed in the Inspection and Maintenance Schedule. We urge you to have it maintained properly to ensure the safety of you and your passengers and retain its dependability.

⚠ WARNING

Neglected inspection and maintenance service of your outboard or attempting to perform maintenance or repair on your outboard if you are not familiar with the correct service and safety procedures could cause personal injury, death, or product failure.

Record maintenance performed in Maintenance Log at the back of this book. Save all maintenance work orders and receipts.

Selecting Replacement Parts For Your Outboard

We recommend using original Mercury Marine Quicksilver replacement parts and Genuine Quicksilver Lubricants.

⚠ WARNING

Using a replacement part that is inferior to the original part could result in personal injury, death, or product failure.

oti1

EPA Emissions Regulations

All new outboards manufactured by Mercury Marine are certified to the United States Environmental Protection Agency as conforming to the requirements of the regulations for the control of air pollution from new outboard motors. This certification is contingent on certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, wherever practicable, returned to the original intent of the design. **Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine SI engine repair establishment or individual.**

MAINTENANCE

Inspection And Maintenance Schedule

BEFORE EACH USE

1. Check that lanyard stop switch stops the engine.
2. Visually inspect the fuel system for deterioration or leaks.
3. Check outboard for tightness on transom.
4. Check steering system for binding or loose components.
5. Visually check steering link rod fasteners for proper tightness. (page 45)
6. Check propeller blades for damage.

AFTER EACH USE

1. Flush out the outboard cooling system if operating in salt or polluted water. (page 41)
2. Wash off all salt deposits and flush out the exhaust outlet of the propeller and gear case with fresh water if operating in salt water.

AFTER 10 HOUR BREAK-IN

1. Remove “Break-In Jets” and install running jets.
2. Inspect and clean spark plugs. (page 49)
3. Check engine timing setup.
4. Drain and replace gear case lubricant. (page 53)
5. Inspect battery. (page 49)
6. Check control cable adjustments.
7. Lubricate all lubrication points. (page 50)
8. Check tightness of bolts, nuts and other fasteners.

MAINTENANCE

Inspection And Maintenance Schedule (Cont.)

EVERY 25 HOURS OF USE OR ONCE A MONTH

1. Lubricate all lubrication points. (page 50)
2. Check level and condition of gear case lubricant. (page 53)
3. Inspect battery. (page 49)
4. Check corrosion control anodes. (page 46)
5. Check tightness of bolts, nuts and other fasteners.
6. Lubricate propshaft with anti-corrosion grease. (50)

EVERY 50 HOURS OF USE OR ONCE A SEASON

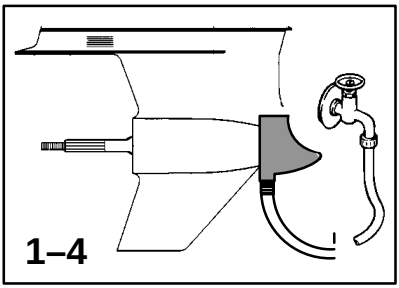
IMPORTANT: Increased lubrication and corrosion maintenance is required if unit is used in salt water.

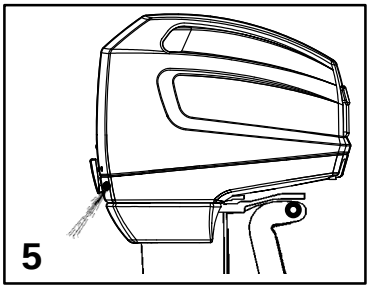
1. Inspect and clean/replace spark plugs. (page 49)
2. Check engine timing setup.*
3. Check charging system.*
4. Inspect reeds.*
5. Drain and replace gear case lubricant. (page 53)
6. Lubricate splines on the drive shaft.*
7. Lubricate entire length of driveshaft with anti-corrosion grease.*
8. Lubricate propshaft with anti-corrosion grease.
9. Check power trim fluid. (page 52)
10. Check control cable adjustments.*
11. Remove engine deposits with Quicksilver Power Tune Engine Cleaner.
12. Replace final fuel filter element. (Page 44)
13. Replace water pump impeller (more often if overheating occurs or reduced water pressure is noted).*

BEFORE PERIODS OF STORAGE

1. Refer to Storage procedure. (page 55)

* *These items should be serviced by an authorized dealer.*





Flushing The Cooling System

Flush the internal water passages of the outboard with fresh water after each use in salt, polluted, or muddy water. This will help prevent a buildup of deposits from clogging the internal water passages.

A nose cone flushing attachment for the Sport Master Gear Case P/N 848998A1 is available thru Quicksilver Accessories.

⚠ WARNING

WARNING – To avoid possible injury when flushing, remove the propeller. Refer to Propeller Replacement.

1 Remove propeller (refer to Propeller Replacement). Install the flushing attachment so the nose cone cup fits tightly over the cooling water intake.

2 Attach a water hose to the flushing attachment. Turn on water and adjust flow so water is leaking around flushing attachment to ensure the engine receives an adequate supply of cooling water.

3 Start engine and run at idle speed in neutral shift position.

4 Adjust water flow (if necessary) so excess water continues leaking out from around the flushing attachment to ensure the engine is receiving an adequate supply of cooling water.

5 Check for a steady stream of water flowing out of the water pump indicator hoses at back of engine. Continue flushing the outboard for 3 to 5 minutes, carefully monitoring water supply at all times.

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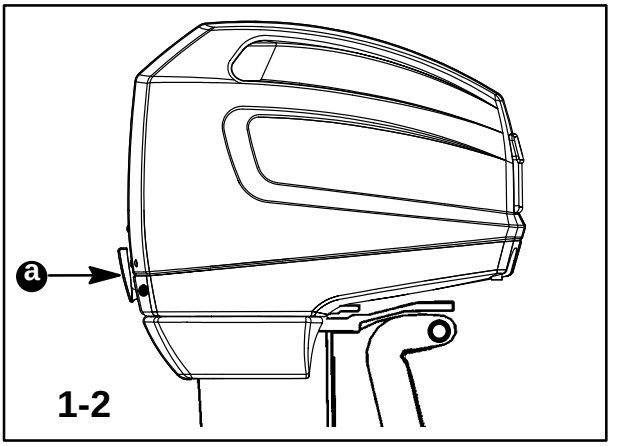


Flushing The Cooling System (Cont.)

IMPORTANT: Stop engine before shutting off water. Never operate engine without cooling water. Even momentary engine operation without water could cause severe engine damage.

6 Stop the engine, turn off the water, and remove the flushing attachment. Reinstall the propeller.

Top Cowl Removal And Installation

⚠ WARNING

Do Not attempt to remove or install cowl while engine is running.

REMOVAL

1 Rotate latch (a) clockwise. Lift rear of cowl and pull back to disengage front latch hook.

2 Lift top cowl up to remove.

INSTALLATION

3 Lower top cowl into position over engine. Tip the front of the cowl slightly to engage the front alignment bracket. After the front bracket is engaged, route cowl down into position making sure the top cowl rubber alignment pins are in the bottom cowl location bracket. Rotate latch (a) counterclockwise to secure top cowl.

MAINTENANCE

Fuel System

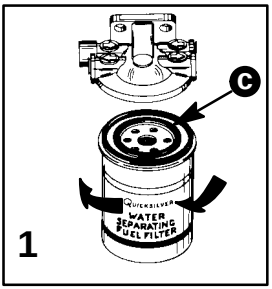
⚠ WARNING

Avoid serious injury or death from gasoline fire or explosion. Carefully follow all fuel system service instructions. Always stop the engine and DO NOT smoke or allow open flames or sparks in the area while servicing any part of the fuel system.

Before servicing any part of the fuel system, stop engine and disconnect the battery. Drain the fuel system completely. Use an approved container to collect and store fuel. Wipe up any spillage immediately. Material used to contain spillage must be disposed of in an approved receptacle. Any fuel system service must be performed in a well ventilated area. Inspect any completed service work for sign of fuel leakage.

FUEL LINE INSPECTION

Visually inspect the fuel line and primer bulb for cracks, swelling, leaks, hardness, or other signs of deterioration or damage. If any of these conditions are found, the fuel line or primer bulb must be replaced.



Fuel System (Continued)

WATER SEPARATING FUEL FILTER (NOT INCLUDED WITH ENGINE)

1 A water separating fuel filter is not included with your engine but is recommended. This filter removes moisture and also debris from the fuel and should be mounted before the fuel pump supplied with your engine. If the filter becomes filled with water, the water can be removed and the filter reused. If the filter becomes plugged with debris, the filter must be replaced with a new filter.

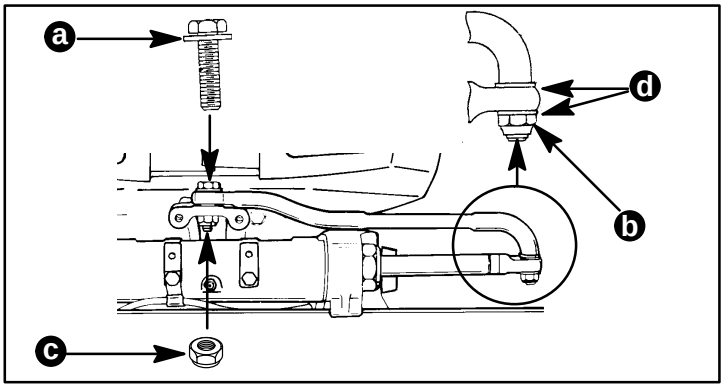
Remove and replace filter as follows

a. Turn ignition key switch to **OFF** position.

b. Remove filter by turning the filter in the direction of the arrow indicated above (counterclockwise). Tip the filter to drain fluid in a suitable container.

c. Lubricate the sealing ring (c) on the filter with oil. Install the filter and tighten securely by hand.

IMPORTANT: Visually inspect for fuel leakage from the filter after starting the engine.



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Steering Link Rod Fasteners

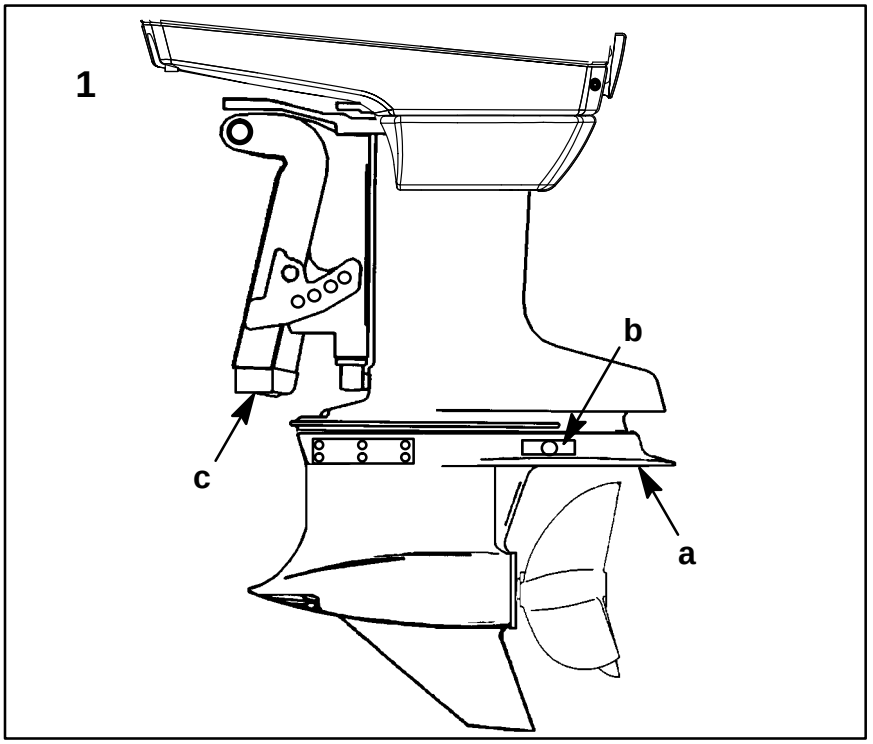
IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using special washer head bolt (“a” – Part Number 10-14000) and self locking nylon insert locknuts (“b” & “c” – Part Number 11-34863). These locknuts must never be replaced with common nuts (non locking) as they will work loose and vibrate off freeing the link rod to disengage.

⚠ WARNING

Disengagement of a steering link rod can result in the boat taking a full, sudden, sharp turn. This potentially violent action can cause occupants to be thrown overboard exposing them to serious injury or death.

Assemble steering link rod to steering cable with two flat washers (d) and self locking nylon insert locknut (“b” – Part Number 11-34863). Tighten locknut (b) until it seats, then back nut off 1/4 turn.

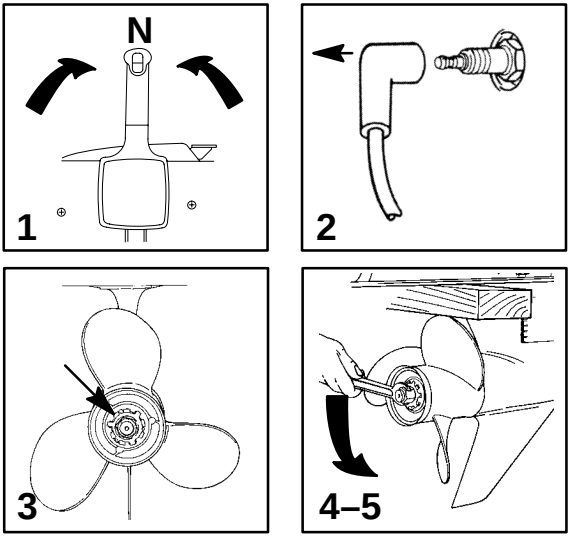
Assemble steering link rod to engine with special washer head bolt (“a” – Part Number 10-14000) and self locking nylon insert locknut (“c” – Part Number 11-34863). First torque bolt (a) to 20 lb. ft. (27.1 N·m), then torque locknut (c) to 20 lb. ft. (27.1 N·m).



Corrosion Control Anode

Your outboard has three corrosion control anodes. One of the anodes is the round plate installed on the antiventilation plate (a), a second one is located just above the antiventilation plate (b), and the third is installed on the bottom of the transom bracket assembly (c). An anode helps protect the outboard against galvanic corrosion by sacrificing its metal to be slowly eroded instead of the outboard metals.

1 Each anode requires periodic inspection, especially in salt water which accelerates erosion. To maintain this corrosion protection, always replace the anode before it is completely eroded. Never paint or apply a protective coating on the anode as this will reduce effectiveness of the anode.



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Propeller Replacement

⚠ WARNING

If the propeller shaft is rotated while the engine is in gear, there is the possibility that the engine will crank over and start. To prevent this type of accidental engine starting and possible serious injury caused from being struck by a rotating propeller, always shift outboard to neutral position and remove spark plug leads when you are servicing the propeller.

1 Shift outboard to neutral (N) position.

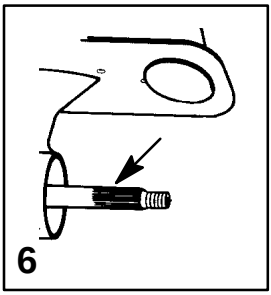
2 Remove spark plug leads to prevent engine from starting.

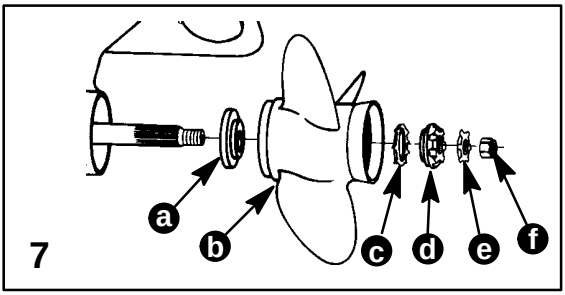
3 Straighten the bent tabs on the propeller nut retainer.

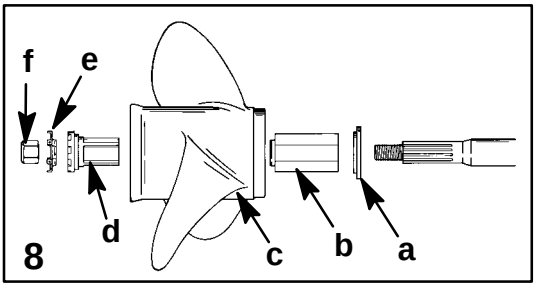
4 Place a block of wood between gear case and propeller to hold propeller and remove propeller nut.

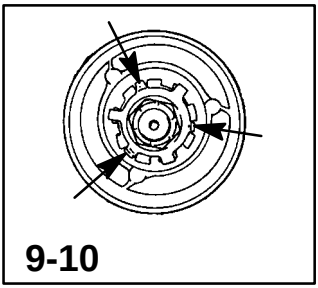
5 Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.

IMPORTANT: Use care to prevent losing forward thrust washer (located between propeller and gearcase) when removing propeller.









Propeller Replacement (Cont.)

6 Coat the propeller shaft with Quicksilver Anti-Corrosion Grease.

IMPORTANT: To prevent the propeller hub from corroding and seizing to the propeller shaft, especially in salt water, always apply a coat of Quicksilver Anti-Corrosion Grease to the entire shaft at the recommended maintenance intervals and also each time the propeller is removed.

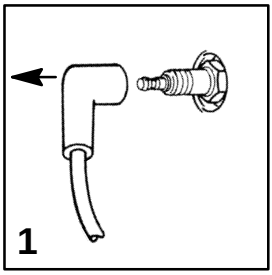
7 Rubber Hub Propellers - Install thrust washer (a), propeller (b), continuity washer (c), splined washer (d), propeller nut retainer (e), and propeller nut (f) onto the shaft.

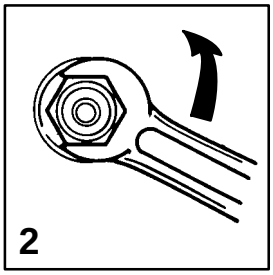
8 Replaceable Hub Propellers (Using Hi-Performance Hub Kit P/N 835258A1) - Install forward thrust hub (a), replaceable drive sleeve (b), propeller (c), drive sleeve adaptor (d), propeller nut retainer (e) and propeller nut (f) onto the shaft.

9 Place a block of wood between gear case and propeller and torque propeller nut to 55 lb. ft. (75 N·m).

10 Secure propeller nut by bending three of the tabs into the thrust hub grooves.

MAINTENANCE





Spark Plug Inspection

Inspect spark plugs at the recommended intervals.

1 Remove the spark plug leads by twisting the rubber boots slightly and pull off. Inspect spark plug boots and replace if cracked.

2 Remove the spark plugs to inspect and clean. Replace spark plug if electrode is worn or the insulator is rough, cracked, broken, blistered, or fouled.

3 Before reinstalling spark plugs, clean away dirt on the spark plug seats. Install plugs finger tight, and tighten to a torque of 20 lb. ft. (27 N·m).

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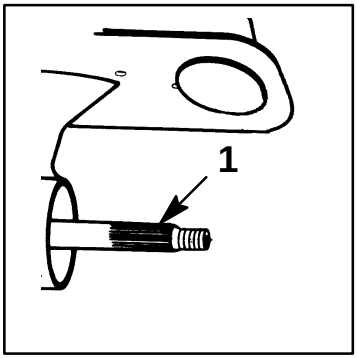
Battery Inspection

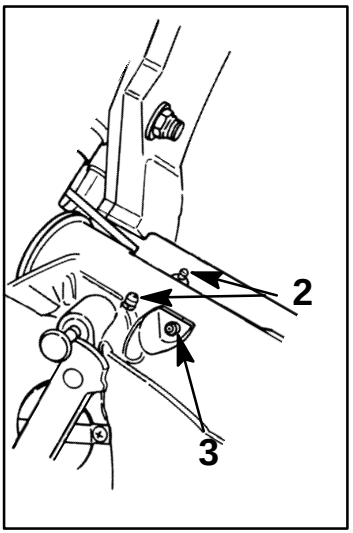
The battery should be inspected at periodic intervals to ensure proper engine starting capability.

IMPORTANT: Read the safety and maintenance instructions which accompany your battery.

1. Turn off the engine before servicing the battery.
2. Add water as necessary to keep the battery full.
3. Make sure the battery is secure against movement.
4. Battery cable terminals should be clean, tight, and correctly installed. Positive to positive and negative to negative.
5. Make sure the battery is equipped with a nonconductive shield to prevent accidental shorting of battery terminals.

MAINTENANCE





Lubrication Points

LUBRICATE POINT 1 WITH QUICKSILVER ANTI-CORROSION GREASE.

1 Propeller Shaft – Refer to Propeller Replacement for removal and installation of the propeller. Coat the entire propeller shaft with lubricant to prevent the propeller hub from corroding and seizing to the shaft.

LUBRICATE POINTS 2 AND 3 WITH QUICKSILVER 2-4-C MARINE LUBRICANT OR SPECIAL LUBRICANT 101.

2 Tilt Lock Grease Fittings – Lubricate through fitting.

3 Swivel Pin Grease Fitting – Lubricate through fitting.

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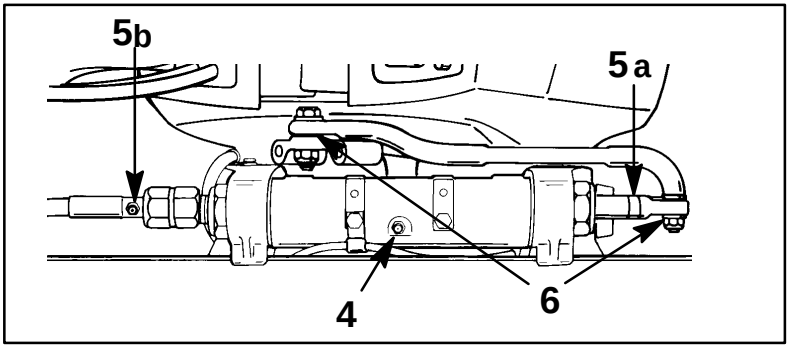


Lubrication Points (Continued)

⚠ WARNING

The end of the steering cable must be fully retracted into the outboard tilt tube before adding lubricant. Adding lubricant to steering cable when fully extended could cause steering cable to become hydraulically locked. An hydraulically locked steering cable will cause loss of steering control, possibly resulting in serious injury or death.

LUBRICATE POINTS 4 AND 5 WITH QUICKSILVER 2-4-C MARINE LUBRICANT OR SPECIAL LUBRICANT 101.

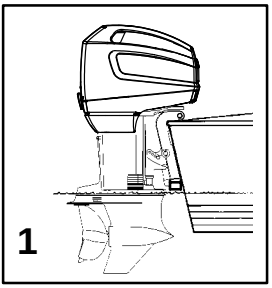
4 Tilt Tube – Lubricate through fitting.

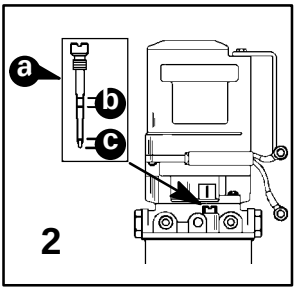
5 Steering Cable – Rotate steering wheel to fully retract the steering cable end (a) into the outboard tilt tube. Lubricate through fitting (b).

LUBRICATE POINT 6 WITH LIGHT WEIGHT OIL.

6 Steering Link Rod Pivot Points – Lubricate pivot points.

MAINTENANCE





Checking Power Trim Fluid

1 Place outboard in the full down (in) position.

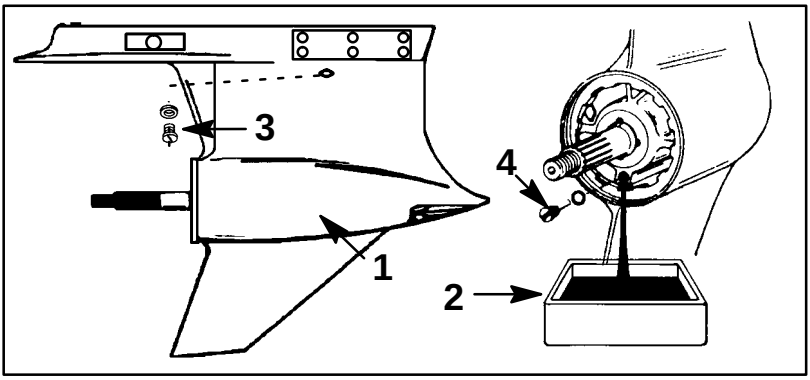
2 Remove fill/vent screw (a). Wipe with a clean, lint-free cloth and reinstall - DO NOT THREAD INTO PUMP. Remove fill/vent screw and note oil level. Oil level must be between the “ADD” (c) and “FULL” (b) marks on dipstick. If necessary, add Quicksilver Power Trim & Steering Fluid or SAE 10W-30 or 10W-40 motor oil thru the fill/vent screw hole to bring level up to the “FULL” mark on the dipstick. DO NOT OVERFILL.

3 To purge system of air, raise the outboard 2 or 3 times. Recheck oil level and add oil if necessary.

4 Reinstall fill/vent screw by turning it all-the-way in, then back it out one and a half (1-1/2) turns.

⚠ CAUTION

Fill/Vent screw MUST BE backed out one and a half (1-1/2) turns (after bottoming out) to vent pump reservoir. FAILURE TO BACK SCREW OUT COULD RESULT IN DAMAGE TO PUMP.



Gear Case Lubrication

When adding or changing gear case lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have the gear case checked by your dealer. Water in the lubricant may result in premature bearing failure or, in freezing temperatures, will turn to ice and damage the gear case.

Whenever you remove the fill/drain plug, examine the magnetic end for metal particles. A small amount of metal filings or fine metal particles indicates normal gear wear. An excessive amount of metal filings or larger particles (chips) may indicate abnormal gear wear and should be checked by an authorized dealer.

DRAINING GEAR CASE

1 Place outboard in a vertical operating position.

2 Place drain pan below outboard.

3 Remove vent plug.

4 Remove fill/drain plug and drain lubricant.

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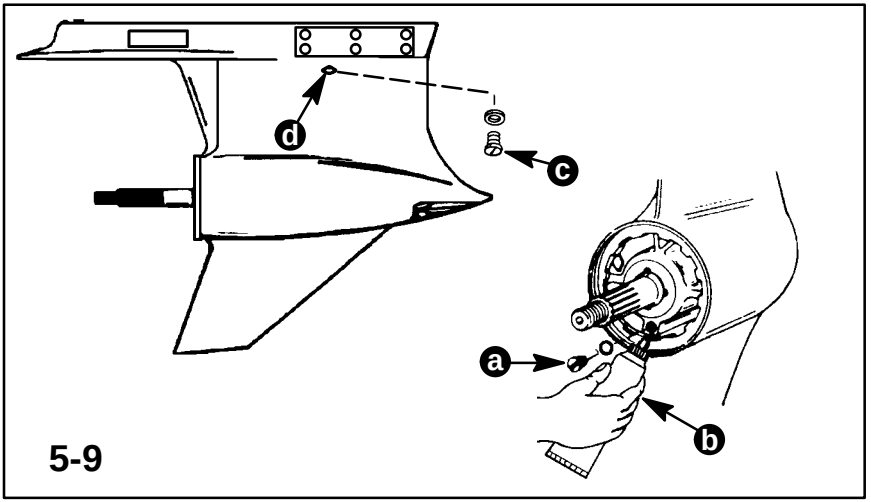
GEAR CASE LUBRICANT CAPACITY

Gear case lubricant capacity is approximately 22.5 fl. oz. (666 ml).



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Gear Case Lubrication (cont.)

CHECKING GEAR CASE LUBRICANT LEVEL AND REFILLING GEAR CASE

5 Place outboard in a vertical operating position.

6 Remove fill plug/sealing washer (a) and top vent plug/sealing washer (c).

7 Place lubricant tube (b) into the fill hole and add lubricant until it appears at the vent hole (d).

IMPORTANT: Replace sealing washers if damaged.

8 Stop adding lubricant. Install the top vent plug and sealing washer (c) before removing the lubricant tube.

9 Remove lubricant tube and reinstall cleaned fill/drain plug and sealing washer (a).

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Submerged Outboard

A submerged outboard will require service within a few hours by an authorized dealer once the outboard is recovered from the water. This immediate attention by a servicing dealer is necessary to minimize internal corrosion damage to the engine once the engine is exposed to the atmosphere.

STORAGE

Storage Preparation

The major consideration in preparing your outboard for storage is to protect it from rust, corrosion, and damage caused by freezing of trapped water.

The following storage procedures should be followed to prepare your outboard for out of season storage or prolonged storage (two months or longer).

⚠ CAUTION

Prevent damage to the water pump (running dry) or overheating of the engine. Never start or run your outboard (even momentarily) without water circulating through all the cooling water intake holes in the gear case.

oif3

POSITIONING OUTBOARD FOR STORAGE

Store outboard in an upright (vertical) position to allow water to drain out of outboard.

⚠ CAUTION

If outboard is stored tilted up in freezing temperature, trapped cooling water or rain water that may have entered the propeller exhaust outlet in the gear case could freeze and cause damage to the outboard.

hib1

Fuel System

IMPORTANT: Gasoline containing alcohol (ethanol or methanol) can cause a formation of acid during storage and can damage fuel systems. If the gasoline used contains alcohol, it is advisable to drain as much of the remaining gasoline as possible from the fuel tank, remote fuel line, and engine fuel system.

The addition of Quicksilver Fuel System Treatment and Stabilizer (p/n 92-78383A12) or Gasoline Stabilizer (p/n 92-817529A12) are highly recommended during extended periods of non use.

Fill the fuel system (tank, hoses, and fuel pump) with treated (stabilized) fuel to help prevent formation of varnish and gum.

STORAGE

Fuel System (Cont.)

1. Portable Fuel Tank – Pour the required amount of Quicksilver Gasoline Stabilizer (follow instructions on container) into fuel tank. Tip fuel tank back and forth to mix stabilizer with the fuel.
2. Permanently Installed Fuel Tank – Pour the required amount of Quicksilver Gasoline Stabilizer (follow instructions on container) into a separate container and mix with approximately one quart (one liter) of gasoline. Pour this mixture into fuel tank.
3. Place the outboard in water or connect flushing attachment for circulating cooling water. Run the engine for ten minutes to allow treated fuel to reach the carburetors.

Protecting Internal Engine Components

Note: Before performing the following steps, make sure the fuel system has been prepared for storage. Refer to Fuel System on previous page.

1. Place the outboard in water or connect flushing attachment for circulating cooling water. Start the engine and let it run in neutral to warm up. Stop engine.
2. Disconnect fuel supply from engine and remove the carburetor air box. Start engine and run at 2000 RPM. Spray Quicksilver Storage Seal into the carburetor throats until the engine runs out of fuel.
3. Remove the spark plugs and inject a five second spray of storage seal around the inside of each cylinder.
4. Rotate the flywheel manually several times to distribute the storage seal in the cylinders. Reinstall spark plugs.

Protecting External Engine Components

1. Lubricate all outboard components listed in the Inspection and Maintenance Schedule.
2. Touch up any paint nicks. See your dealer for touch-up paint.
3. Spray Quicksilver Corrosion Guard on external metal surfaces (except corrosion control anodes).

STORAGE

Gear Case

1. Drain and refill the gear case lubricant (refer to maintenance procedure).

Battery Storage

1. Follow the battery manufacturers instructions for storage and recharging.
2. Remove the battery from the boat and check water level. Recharge if necessary.
3. Store the battery in a cool, dry place.
4. Periodically check the water level and recharge the battery during storage.

TROUBLESHOOTING

1 – STARTER MOTOR WILL NOT CRANK THE ENGINE

POSSIBLE CAUSES

- Outboard gearshift not in neutral position.
- Weak battery or battery connections are loose or corroded.
- Ignition key switch failure.
- Wiring or electrical connection faulty.
- Starter motor or starter solenoid failure.

2 – ENGINE WILL NOT START

POSSIBLE CAUSES

- Lanyard stop switch not in **RUN** position.
- Incorrect starting procedure. Refer to Operating Section.
- Old or contaminated gasoline.
- Engine flooded. Refer to Operating Section.
- Fuel is not reaching the engine.
    a. Fuel tank is empty or tank shut-off valve closed.
    b. Fuel tank vent not open or is restricted.
    c. Fuel line disconnected or kinked.
    d. Fuel filter obstructed. Refer to Maintenance Section.
    e. Fuel pump failure.
    f. Fuel tank filter obstructed.
- Ignition system component failure.
- Spark plugs fouled or defective. Refer to Maintenance Section.

3 – ENGINE OVERHEATING (CONTINUOUS HORN SOUND)

POSSIBLE CAUSES

- Water pickup clogged or blocked.
- Cooling system clogged
- Engine overloaded (cannot attain recommended RPM)
- Incorrect ignition timing.
- Not enough oil in fuel mixture
- Lean fuel mixture

TROUBLESHOOTING

4 – ENGINE RUNS ERRATICALLY

POSSIBLE CAUSES

- Spark plugs fouled or defective. Refer to Maintenance Section.
- Incorrect setup and adjustments.
- Fuel pump failure.
- Fuel is being restricted to the engine.
  - d. Engine Fuel filter is obstructed. Refer to Maintenance Section.
  - e. Fuel tank filter obstructed.
  - f. Stuck anti-siphon valve located on permanently built in type fuel tanks.
  - g. Fuel line is kinked or pinched.
  - h. Reed valve open or broken.
- Ignition system component failure.

5 – PERFORMANCE LOSS

POSSIBLE CAUSES

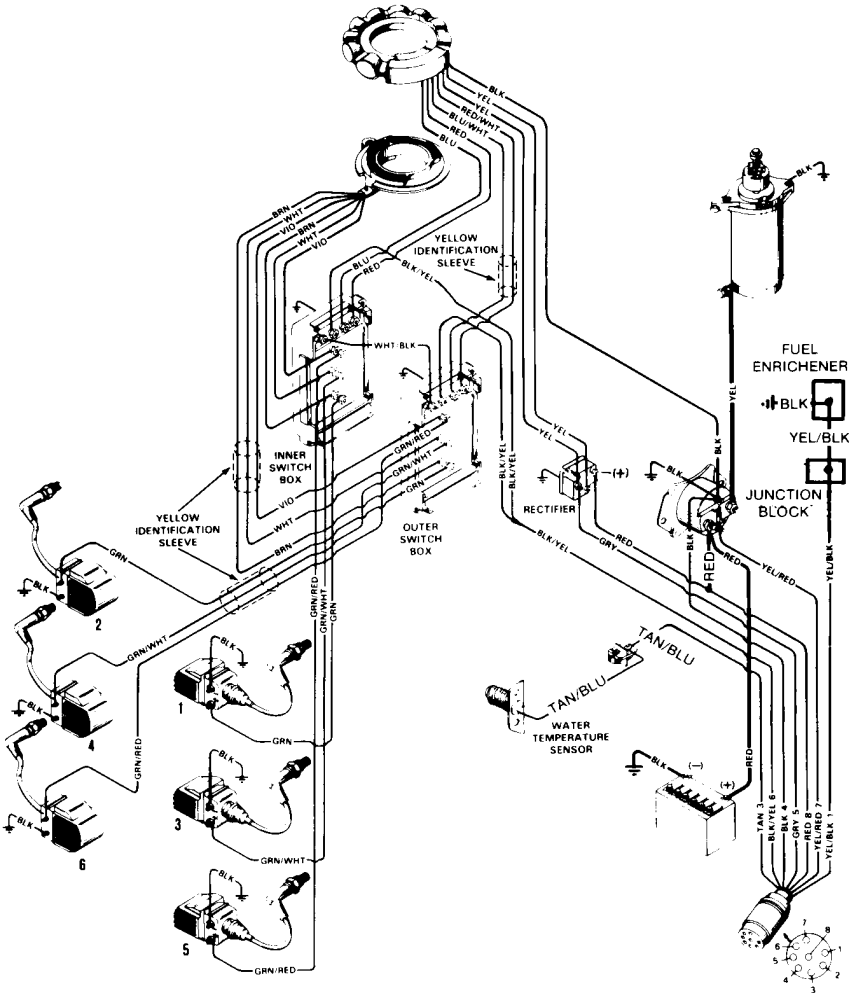
- Throttle not fully open.
- Damaged or improper size propeller.
- Incorrect engine timing, adjustments, or setup.
- Boat overloaded or load improperly distributed.
- Excessive water in bilge.
- Boat bottom is dirty or damaged.

6 – BATTERY WILL NOT HOLD CHARGE

POSSIBLE CAUSES

- Battery connections are loose or corroded.
- Low electrolyte level in battery.
- Worn out or inefficient battery.
- Excessive use of electrical accessories.
- Defective rectifier, alternator, or voltage regulator.

ENGINE WIRING DIAGRAM



MAINTENANCE LOG

Record all maintenance performed on your outboard. Be sure to save all work orders and receipts.

DATE	MAINTENANCE PERFORMED	ENGINE HOURS

ok

MAINTENANCE LOG

DATE	MAINTENANCE PERFORMED	ENGINE HOURS